Amendments to the Claims

Please cancel Claims 1, 25 and 26. Please amend Claims 2, 3, 4, 6 and 7. The Claim Listing below will replace all prior versions of the claims in the application:

Claim Listing

1. (Canceled)

2. (Currently amended) ~~The router of claim 1, wherein~~ A router coupled to a plurality of external links transporting data packets to and from the router, the router comprising:

~~the~~ a plurality of fabric routers, one or more external links coupled to each fabric router, the plurality of fabric routers interconnected by fabric links forming a Gamma graph interconnection network ~~has~~ having a diameter (D) and a radix (Δ), the radix greater than the diameter;

the interconnection network being link fault tolerant by providing Δ-1 alternative paths between any two external links, packets alternatively routed between external links over one of the Δ-1 paths through the interconnection network having a hop distance greater than the diameter; and

packets routed between external links by traversing one or more hops across the fabric links.

3. (Currently amended) ~~The router of claim 1,~~ A router coupled to a plurality of external links transporting data packets to and from the router, the router comprising:

a plurality of fabric routers, one or more external links coupled to each fabric router, the plurality of fabric routers interconnected by fabric links forming a Gamma graph interconnection network, wherein each fabric router is interconnected to a subset of adjacent fabric routers, each fabric router having a bidirectional interconnection with one of the adjacent fabric routers with the remaining interconnections being primarily unidirectional; and

packets routed between external links by traversing one or more hops across the fabric links.

4. (Currently amended) ~~The router of claim 1,~~ A router coupled to a plurality of external links transporting data packets to and from the router, the router comprising:

a plurality of fabric routers, one or more external links coupled to each fabric router, the plurality of fabric routers interconnected by fabric links forming a Gamma graph interconnection network; and

packets routed between external links by traversing one or more hops across the fabric links;

wherein the Gamma graph interconnection network having a radix equal to 8 and a diameter equal to 4 comprises:

3024 interconnected fabric routers[[;]],

at least 24 external links coupled to each fabric router via ports[[;]], and

at least 2 logical data channels supported per port, each channel having a bandwidth of at least 2 gigabits per second.

5. (Original) The router of claim 4, wherein the Gamma graph interconnection network provides a total bandwidth of at least 290 terabits per second.

6. (Currently amended) The router of claim [[1]] 3, wherein the Gamma graph interconnection network comprises:

six or more interconnected fabric routers;

at least one external link coupled to each fabric router via at least one port; and

at least one logical data channel supported per port.

7. (Currently amended) ~~The router of claim 1,~~ A router coupled to a plurality of external links transporting data packets to and from the router, the router comprising:

a plurality of fabric routers, one or more external links coupled to each fabric router, the plurality of fabric routers interconnected by fabric links forming a Gamma graph interconnection network; and

packets routed between external links by traversing one or more hops across the fabric links;

wherein each fabric router comprises:

a switch[[;]],

at least one traffic manager coupled to the switch[[;]], the traffic manager receiving data packets from the one or more external links and forwarding the packets into the interconnection network, the traffic manager buffering data packets in memory coupled to the traffic manager, the traffic manager receiving data packets from the switch and forwarding the data packets out of the interconnection network to the one or more external links[[;]], and

the switch coupled to switches of adjacent fabric routers by fabric links fanning in and out of the switch according to a set of Gamma graph adjacency rules, the switch forwarding at least portions of data packets to the at least one traffic manager or to switches of adjacent fabric routers.

8. (Original) The router of claim 7, further comprising

a bus;

the bus coupled to a traffic manager transporting data packets from the one or more external links coupled to the fabric router via one or more ports, the bus capable of supporting a configurable number of ports, the bandwidth of a port being inversely proportional to the number of ports configured per bus.

9. (Original) The router of claim 8, further comprising

at least one application specific module (ASM) providing an interface between at least one external link and the fabric router;

the at least one ASM coupled to the bus, the ASM coupled to at least one external link via at least one port, the ASM transporting data packets from the external link to the bus.

10. (Original) The router of claim 8, wherein the bus is an Infiniband™ bus.

11. (Original) The router of claim 8, wherein the bus is a CSIX™ bus.

12. (Original) The router of claim 8, wherein the bus is capable of supporting one or more logical data channels per port configured.

13. (Original) The router of claim 12, wherein the one or more logical data channels are Infiniband™ lanes.

14. (Original) The router of claim 9, wherein the application specific module links to a network providing data, data processing, or data storage.

15. (Original) The router of claim 9, wherein the application specific module (ASM) is a network interface card.

16. (Original) The router of claim 15, wherein the network interface card is an Ethernet network interface card.

17. (Original) The router of claim 15, wherein the network interface card is an ATM network interface card.

18. (Original) The router of claim 9, wherein the application specific module (ASM) links to a storage subsystem.

19. (Original) The router of claim 9, wherein the application specific module (ASM) is a processor module.

20. (Original) The router of claim 9, wherein the application specific module (ASM) is a WAN interface card.

21. (Original) The router of claim 9, wherein the application specific module (ASM) is a POS interface card.

22. (Original) The router of claim 9, wherein the application specific module (ASM) is an Infiniband™ interface card.

23. (Original) A router coupled to a plurality of external links transporting data packets to and from the router, the router comprising:

a plurality of fabric routers, one or more external links coupled to each fabric router, the plurality of fabric routers interconnected by fabric links forming an interconnection network having a diameter (D) and a radix (Δ), the radix greater than the diameter;

the interconnection network being link fault tolerant by providing Δ-1 alternative paths between any two external links, packets alternatively routed between external links over one of the Δ-1 paths through the interconnection network having a hop distance greater than the diameter.

24. (Original) A router coupled to a plurality of external links transporting data packets to and from the router, the router comprising:

a plurality of fabric routers, one or more external links coupled to each fabric router, the plurality of fabric routers interconnected by fabric links forming an interconnection network, each fabric router interconnected to a subset of adjacent fabric routers, each fabric router having a bidirectional interconnection with one of the adjacent fabric routers with the remaining interconnections being primarily unidirectional; and

packets routed between external links by traversing one or more hops across the fabric links.

25, 26 (Canceled)